

**Environmental Management Technology Leveraging Initiative
(FETC DE-FC21-94MC31179)**

**INTRODUCTION AND IMPLEMENTATION OF REMEDIATION
TECHNOLOGIES AT DOE SITES – THE GLOBAL
ENVIRONMENTAL TECHNOLOGY
ENTERPRISE (GETE) MODEL**

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Introduction

Frequent topics of discussion and written presentations often describe the challenges associated with bringing new and innovative environmental technologies to use at DOE sites. One effort to meet these challenges is the Global Environmental Technology Enterprise (GETE), a partnership between the Department of Energy (DOE), Office of Science and Technology (OST), the Federal Energy Technology Center (FETC) and the Global Environment & Technology Foundation (GETF).

This paper describes the activities and successes of the Global Environmental Technology Enterprise (GETE). The program was established in 1994 between FETC and GETF to devise ways to bring DOE supported technologies to bear on the severe environment legacy of the Cold War. Because of the enormity of these problems, DOE has invested extensively in new and innovative technologies with the understanding that they are faster, better, cheaper, and safer than the existing baseline of solutions, but acceptance has proven difficult.

The private partner in this enterprise (GETE) is the Global Environment & Technology Foundation (GETF), a not-for-profit organization that, as a goal, fosters innovation by uniting environment, technology, and enterprise to encourage sustainable practices worldwide. GETF was awarded this contract on a competitive basis with a mission to explore new methods of commercialization and accomplish a wide range of tasks.

Objective

The primary objective of the GETE partnership is to develop and execute strategies and methods to facilitate the implementation of technology solutions at sites to address environmental restoration problems. It accomplishes this objective by assisting private companies to bring to the environmental marketplace advanced technologies that offer cost or performance advantages over existing technologies required by the Department of Energy (DOE) to fulfill Environmental Management (EM) environmental restoration needs.

Approach

GETE has a three-activity approach to facilitating the deployment of DOE and other developed technology products. They are:

Technology Qualification and Identification of Deployment Opportunities

This is the first activity and is the basis of the partnership's success. It is the method by which GETE fills site technology needs with new and innovative technologies from DOE or other sources. Working with technology developers and DOE site personnel, a senior cadre of site-experienced technologists identify and qualify promising technologies and technology systems. These chosen technologies must provide value-added solutions that are consistent with site remediation schedules and project milestones. For the past year, our efforts have focused on the Savannah River Site, the Oak Ridge Complex, the Rocky Flats Site, and the Mound Site. At these sites senior GETE specialists, or points-of-contact (POCs), work directly with project managers and potential technology end users responsible for cleanup activities. These on-site POCs not only collect site needs and match them with known technologies but they also ensure that there is both a technical fit and acceptance at the applications level. GETE POCs are supported by market analysts, environmental protection regulatory advisors, small business advocates, and technology discipline specialists.

Small Business and Technology Developer Assistance

The second activity of the partnership aims to improve the opportunity for businesses, especially small business, to penetrate the DOE marketplace. GETE has created a full variety of market studies, guides, and technology need data sheets¹. In addition, as part of the activities working with business and technology developers, the GETE partnership has developed a Commercialization and Deployment workshop to help technology holders understand the issues affecting the deployment of new and innovative technologies into DOE sites. These one and a half day workshops have as their major objectives, the definition of a technology and site-specific pathway that will lead to technology deployment. Included is the understanding of how other issues, such as funding, timing, and schedule affect site remediation activities. Once such a pathway is

¹ These publications are available during the October 12-14, 1999 FETC meeting, online at www.gnet.org, or by contacting the author at vfailmezger@getf.org

identified, GETE continues to work with the technology holder to develop additional business and technical resources. The resource manual for the workshop can be downloaded from www.gnet.org/filecomponent/deploy/MAIN2.HTML.

Information Management

The third activity is to satisfy the need for the timely dissemination of relevant technology information (capabilities and applications). Without a way to publicize both technologies and technology needs, technology developers cannot know and respond to opportunities to use their technology for remediation projects. To solve this problem, our team has developed an Internet tool known as GNET® (www.gnet.org) an award-winning, on-time global information center for environmental information, remediation requirements and technologies. Included within GNET® is the TechKnow database (www.techknow.org), an online database that permits Internet users to share and receive information immediately regarding technical solutions to clean-up problems. This database is unique in that it permits the technology holder to enter and update development information.

Project Description by Activity

Technology Qualifications and Identification of Deployment Opportunities

Our POCs have found that as they work with site personnel they jointly uncover unexpected requirements for technology. Because GETE has reviewed and created a portfolio of technologies we are in a position to suggest alternatives. We have several examples where we have helped a potential end user with the identification of unique problems that can be solved by one of our portfolio of technologies. One example of this activity involved a GETE representative who set up a test program for the Rad Elec Inc. technology (GETE technology) to monitor levels of uranium in a contaminated building at Oak Ridge. This was an unpublished need and the field test of the Rad Elec's E-Perm system would not have occurred without GETE intervention. We believe that this is what GETE brings to technology deployment that no other organization can, that is DOE operational experience to assist companies trying to deploy their technologies and the orchestrating required to get the technology accepted.

Acting as the bridge between technology developers and DOE site remediation personnel, we present new and innovative technologies as solutions to cleanup problems, consistent with timetables established by the DOE Office of Environmental Management (EM) and its planning strategies. The goal is to present a fully evaluated and available technology to a technology problem holder. At this stage, the technology must have zeroed in on a specific recognized need at a specific site. Activities at the Savannah River Site as of August 1998 are recorded. At that time, the site had 71 published needs, 22 of which GETE reviewed in detail as potential matches for GETE portfolio technologies.

Small Business and Technology Developer Assistance

This portion of the GETE program is designed to facilitate the deployment of DOE's investment in research and technology development by addressing the most pressing needs of the technology developers. GETE assists these technology developers to create realistic business and site-specific technology deployment plans. In the course of these activities, GETE offers commercial viability advice, perform market assessments and identifies potential partners while brokering the technologies at specific sites.

GETE has learned that in order to assure a technology's transition from concept to deployment, a number of factors need to be considered. Factors can range from understanding commercial market and industry business considerations to identifying specific activities to be performed and the requirement for required resources to meet goals. The GETE Management Plan entitled *Environmental Management Technology Leveraging Initiative* published in June 1998 describes the process. The activities described in the plan are intended to help overcome both the common and the special barriers that limit the use of DOE assisted innovative technologies. The plan is divided into three phases with associated activities as follows:

The first phase includes activities that efficiently and thoroughly identify, qualify and select those technologies that have the greatest potential of being accepted and used by a commercial company (commercialized).

Activities conducted during the second phase, position technologies for fast track deployment at selected DOE sites and employ separate activities to verify that a need exists at a particular DOE site for an innovative technology. Further a likely technology user or purchaser is identified.

The third phase is referred to as the Deployment Phase and activities under this phase are performed as part of the Technology Qualifications and Identification of Deployment Opportunities activity.

Information Management

In 1998, GETE made some major improvements to the GNET® website in response to the site's continued growth and popularity. It was found that the platform running the system could no longer keep up with user demand; therefore, in less than two weeks, the entire GNET® website was transferred to a newer, faster, and more user-friendly platform. The overall speed and response of the system increased dramatically with the change. We are pleased to report that this move was accomplished entirely by GETF staff.

The new configuration also allows GETE to include a few previously unavailable features including a new web-based Master Administrator Tool, which allows for ease of entering, editing and approving GNET-bound information. With this tool any member of the GETF information team can update the GNET® website from any computer with Internet access. These activities and other specialized results are summarized in the next section.

Results by Activity

Technology Qualifications and Identification of Deployment Opportunities

- Coordinated Management and Process Plan
- Establishment of DOE Site Specific points-of-contact
- Rocky Flats Technology Insertion Opportunities (a GETE leveraged activity)
- Substantial work on an Oak Ridge Technology Insertion Plan

Small Business and Technology Developer Assistance

The publication of almost 60 documents including ten updated industry market sheets, deployment plans, market assessments, resource publications and guides. Recent or recently revised publications include:

- Deploying Environmental Remediation Technology in the DOE Market Place*
- TechKnow 2.0 User Guide*
- Understanding Environmental Regulatory Issues at DOE Sites*
- After the Win, a DOE Site Guide for Technology Deployers*
- DNAPL Market Study*
- Real Time Monitoring of Metals for Industrial Hygiene*
- Asbestos Technologies*
- Market Opportunity Analysis, Bio-Imaging Research, Inc.*
- Mixed Waste Fact Sheet* (leveraged from another DOE program).
- The Technology Deployment Workshop and Resource Book*

The development and multiple presentation of Technology Deployment Workshops to help technology developers identify, define and plan successful technology transfer. The workshop helps identify a pathway leading to the deployment of the technology and prepares a draft deployment plan describing the necessary activities to facilitate the deployment.

Direct interaction with over 300 environmental technology holders.

Information Management

- New Web-site Platform
- Improved and Advanced Search Feature
- Market Section Improvements for Opportunities
- Two New Technology Databases based on TechKnow
- Monthly average use of GNET, 350,000 hits with approximately 60,000 page views

Benefits

Taken as an entire package, we believe that the GETE program provides an extremely valuable resource to technology developers and small business commercial companies. Our process is based on providing information and other tools to effect technology deployment. What makes the GETE program unique is the assignment of site experts points-of-contact (POC) who understand specific site needs and know the responsible site decision-makers. Building on their extensive experience, they get on the site and find the problem holders.

In some cases these POCs discover that a technology thought to be of use in a particular situation has proven not suitable. Identifying this fact as early in the process is also of utmost importance so that efforts to deploy a technology can be shifted to a different site. For those technologies that become part of the GETE portfolio, site acceptance has occurred because of POC brokering between the technology provider and the problem holder. Without this hand-on brokering, our experience has shown that technology consideration is unlikely to happen.

Finally the huge success of the GNET® must be mentioned. This website is absolutely unique in that it provides small business with a forum to not only promote environmental remediation technologies and services but also as a resource for up-to-date business and marketing advice. Small business often cites GNET® as the place to look on the Internet to obtain environmental information and remediation opportunities.

Future Activities

Given that the GETE program is currently operating on carryover funds, this report will serve as an interim status report. A final topical report will be issued upon contract completion.

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